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SYSTEM LEVEL COMMONALITY ANALYSIS OF THE S-3A/P-3C TACCO POSITION

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Approximately 64% of a TACCO's tasks are relatively identical for S-3 and P-3C Weapon Systems at the function level. The distribution of these tasks across training areas is concentrated most in the Tactics and Sensor Management areas. Approximately 21% of a TACCO's task are relatively similar for the S-3 and P-3C Weapon Systems. Of these, almost 100% have become automated function related tasks in the S-3.

The author wishes to acknowledge his indebtedness to E. L. Patterson and P. K. Dittman of Lockheed-California Company for their technical review of S-3A material. The assistance provided by training personnel from Patrol Squadron THIRTY and Patrol Squadron THIRTY ONE in preparing P-3C material is also gratefully acknowledged.

1

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i

TABLE OF CONTENTS

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ADP: Automatic Data Processing Subsystem.

ARM: Armament Subsystem.

B/N Bombardier/Navigator.

CAIC: Commonality Analysis Index Code.

CICO: Combat Information Control Officer.

COM: Communication Subsystem.

ECMO: Electronic Countermeasures Officer.

NAV: Navigation Subsystem.

NC: No Capability
Task statements identified as NFO functions usually effecting data storage/retrieval or operational functions primarily without the ADP Subsystem.

NFO: Naval Flight Officer.

NSA: Nonsystem Applicable.
Task statement unable to be identified with NFO functions in S-3/P-3C Systems.

RAG: Replacement Air Group.

SA: System Applicable.
Task statement identified as NFO functions in S-3 and P-3C systems. Includes both SC and NC task statements.

SC: System Capability.
Task statements identified as NFO functions usually effecting data storage/retrieval or operational program functions through the ADP subsystem.

RAN: Reconnaissance Attack Navigator.

RIO: Radar Intercept Officer.

SEN: Sensor Subsystem.

TAC: Tactical Subsystem.

TACCO: Tactical Coordinator.

SUMMARY PAGE

THE PROBLEM

Realistic undergraduate and fleet training requirements have to be established for NFOs who are to man the S-3, one of the Navy's newest production aircraft. The purpose of the present study was to document a tactical coordinators (TACCO) potential operational functions on an S-3, and to identify what relationships the resultant duties and tasks have with a TACCO's operational functions on a P-3C.

FINDINGS

Approximately 64% of a TACCO's tasks are relatively identical for S-3 and P-3C Weapon Systems at the function level. The distribution of these tasks across training areas is concentrated most in the Tactics and Sensor Management areas. Approximately 21% of a TACCO's task are relatively similar for the S-3 and P-3C Weapon Systems. Of these, almost 100% have become automated function related tasks in the S-3.

ACKNOWLEDGEMENTS

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INTRODUCTION

The Chief of Naval Operations (CNO), in the course of reviewing training effectiveness, has recognized a need for analysis of the operational tasks of a Naval Flight Officer (NFO). This need is particularly urgent for the Anti-submarine Warfare (ASW) community. Realistic undergraduate and fleet training requirements have to be established for NFOs who are to man the S-3, the Navy's newest production aircraft. Students in the ASW pipeline are presently trained as navigation/communication operators (NAVCOM) and tactical coordinators (TACCO) for the S-3's land-based counterpart, the P-3C Orion.

The purpose of the present study was to document a TACCO's potential operational functions on an S-3, and to identify what relationships the resultant duties and tasks have with a TACCO's operational functions on a P-3C. Does a P-3C have the same task requirements for a TACCO as the S-3? Where do they differ? Where there is a common requirement, does the task share an automated function capability via a computer process, or is it more manual in one system than in the other? These are the kinds of questions which this study was designed to answer.

The S-3's stage of development permitted analysis only at a level that describes what the S-3 weapon system enables a TACCO to do. Other studies have contributed to solving the more general problem by administering function description inventories to selected samples from the Atlantic and Pacific fleets. These respondants were not confined to task statements of weapon system capability, but were able to appraise their decision-making processes, estimate time, and assess criticality. Documentation, evaluation, and analysis across aircraft for all these studies are additionally bound together by a model of the NFO that permits a common level of reference for developing each position's task inventory. The NFO model that illustrates how a weapon system defines an NFO's operational role is found in Figure 1 on page 57.

METHOD

INVENTORY DEVELOPMENT

Evaluation of an NFO's operational role points up two major functions--Tactics and Coordination--whereby a weapon system is managed. These functions generate their own roles.

A. Tactician - interprets tactical data into tactical mission instructions using various subsystems.

1. Communication Subsystem
2. Navigation Subsystem
3. Tactical Subsystem
4. Sensor Subsystem
5. Armament Subsystem
6. Automatic Data Processing Subsystem

B. Coordinator - effects the transmission of tactical data inputs between and/or from the following:

1. Subsystem; e.g., Communications (COM); Navigation (NAV); Sensor (SEN), etc.
2. Crew; e.g., Pilot; Sensor Operator (SEN OPR); Communications/Navigation (COMM/NAV) Operator, etc.
3. Participating Units; e.g., Hunter Killer Forces (HUK).
4. Environmental Sources; e.g., Geonavigation (GEONAV).
5. Tactical Sources; e.g., Tactical Navigation (TACNAV).

The tactical and coordination functions have been specified by developing an inventory of tasks peculiar to the tactics and coordination associated with each major subsystem of a weapon system. For analytical purposes, related tasks have been grouped together under the heading of a duty. Each duty has been assigned an alpha designator. Their respective tasks have received numerical designators. The grouping of duties according to their subsystems and the alpha designators assigned to those duties is illustrated in Table I. Coordination duties precede tactical duties in the table to correspond with their usual order in real time.

Those equipment functions that enable a TACCO to store or retrieve data (information exchange) were analyzed for their duty/task content. The duties and tasks were categorized as Coordination Duties/Tasks and arranged according to six major weapon system subsystems: Communication (COM); Navigation (NAV); Tactical (TAC); Sensor (SEN); Armament (ARM); and Automatic Data Processing (ADP). This arrangement generated 23 coordination duties.

Those equipment functions that enable a TACCO to interpret tactical data into tactical mission instructions were similarly analyzed for their duty/task content and arranged according to the same scheme as the coordination duties/tasks. This produced an additional 17 duties which were then categorized as Tactical Duties.

In order for the inventory to be amenable to data analysis the 23 coordination duties were collapsed into six general coordination duties. The 17 tactical duties were collapsed into 16 duties. The original 23 coordination duties and 17 tactical duties were retained as "subduties" of 22 general duty areas alphabetized A-V. All tasks fall within a duty/sub-duty category and are indexed accordingly with each task numbered consecutively within the alpha duty designation as illustrated in Table II.

Using TACCO function descriptions from Lockheed and naval publications on the S-3 and P-3C (1, 2, 3, 4, 5), an inventory of the function level duties and tasks anticipated for the S-3 TACCO was developed.

The complete inventory of duties and tasks referred to in this report by various summary codes is as follows:

DUTY A.0.0.: COMMUNICATION DATA EXCHANGE

Sub-Duty A.1.0: Exchange communication status information.

Tasks:

A.1.1 Store/retrieve frequency and channel selection of the UHF transceivers.

A.1.2 Store/retrieve frequency and channel selection of the HF transceivers.

A.1.3 Store/retrieve selection of transmission modes and format (voice, TTY, DL).

A.1.4 Store/retrieve communication defects.

Sub-Duty A.2.0: Exchange frequency assignment information.

Tasks:

A.2.5 Store/retrieve type of frequency (tactical/nontactical).

A.2.6 Store/retrieve purposes of frequencies.

A.2.7 Store/retrieve priority of frequencies.

A.2.8 Store/retrieve Net Control frequency.

A.2.9 Store/retrieve data form and transmission mode descriptions per frequency.

A.2.10 Store/retrieve preset time changes to alternate frequencies.

Sub-Duty A.3.0: Exchange Data Link Information.

Tasks:

A.3.11 Store/retrieve data link messages received which direct specific actions.

A.3.12 Store/retrieve data link messages originated when designated as Net Control Station's TACCO.

A.3.13 Store/retrieve DATA DUMP ASW summary messages received from another unit.

A.3.14 Transfer pertinent received data to an active data storage area.

A.3.15 Transfer pertinent received data to the flight record data tape.

A.3.16 Designate pertinent categories of data for DATA DUMP transmissions.

A.3.17 Select a fixed message format.

A.3.18 Establish relative positions of the participating units.

Sub-Duty A.4.0: Exchange data link parametric information.

Tasks:

A.4.19 Store/retrieve data link reference point.

A.4.20 Store/retrieve own aircraft's position and track number.

A.4.21 Store/retrieve identity of participating units.

A.4.22 Store/retrieve track numbers of participating units.

A.4.23 Store/retrieve reported position of participating units.

A.4.24 Store/retrieve identity of Net Control.

A.4.25 Store/retrieve location of Net Control.

Sub-Duty A.5.0: Exchange crypto material information.

Tasks:

A.5.26 Exchange an encode sub-mode and enter message content.

A.5.27 Encode message data and display for voice transmission reference.

A.5.28 Decode in a sub-mode and display.

A.5.29 Initiate or respond to authentication procedures.

Sub-Duty A.6.0: Exchange voice call information.

Tasks:

A.6.30 Store/retrieve type units within communication range.

A.6.31 Store/retrieve units' organization within communications range.

A.6.32 Store/retrieve voice call signs of within communications range units.

A.6.33 Store/retrieve revised voice call sign(s) of within communications range units.

A.6.34 Store/retrieve time of each voice call sign revision for within communications range units.

DUTY B.0.0: DIRECT INFORMATION EXCHANGE WITHIN THE CREW

Sub-Duty B.1.0: Exchange information directly within the crew.

Tasks:

B.1.1 Communicate via inter-communications system.

DUTY C.0.0: INDIRECT INFORMATION EXCHANGE WITHIN THE CREW

Sub-Duty C.1.0: Exchange information indirectly within the crew.

Tasks:

C.1.1 Direct Pilot to a specific point or area of interest via an "undesignated" fly-to point (FTP).

C.1.2 Direct Pilot to a specific point or area of interest via a "designated" FTP.

C.1.3 Direct Pilot to a specific point or area of interest via a "monitor" FTP.

C.1.4 Indicate recognition of a newly entered contact to the System and to the operator initiating the contact entry.

C.1.5 Display on Pilot's MPD a duplicate of any conic, vector, or symbol and initiated System actions displayed on TACCO's MPD.

C.1.6 Remove data from the Pilot's Multi-Purpose Display (MPD).

C.1.7 Modify display center of Pilot's tactical plot with "hook" as reference.

C.1.8 Modify display center of Pilot's tactical plot with aircraft as reference.

C.1.9 Display selectively separated (time) points representative of past aircraft positions.

C.1.10 Display the system computed track used to control the AFCS to a specified FTP.

C.1.11 Observe content of Pilot's displayed data.

DUTY D.0.0: INFORMATION EXCHANGE WITH OTHER ASW UNITS

Sub-Duty D.1.0: Exchange information with other participating ASW units and organizations.

Tasks:

D.1.1 View contents of COMM INDEX.

D.1.2 Select order and insert track or contact numbers.

D.1.3 Initiate transmission of selected order.

D.1.4 View content of all message orders transmitted.

D.1.5 Rescind previously transmitted orders.

D.1.6 Initiate voice communication via DATA LINK alert.

D.1.7 Transmit emergency messages relative to a geographic point.

.8 Transfer all categories of data via DATA LINK message.

D.1.9 Review and transmit via DATA LINK information on all/ selected contacts within the area.

D.1.10 Review and transmit via DATA LINK environmental parameters significant to the relieving unit's mission.

D.1.11 Review and transmit via DATA LINK all significant submarine, unknown, and hostile force contacts gained during a mission.

D.1.12 Review and transmit via DATA LINK amplifying information on all sonobuoys active at time aircraft relief.

D.1.13 Restrict automatic display from remote units subsequent to selection.

D.1.14 Review orders originated by remote controlling authority.

D.1.15 Display remote air contact data.

D.1.16 Display remote surface contacts.

D.1.17 Display remote submarine contacts.

D.1.18 Display data concerning sonobuoys deployed by remote units.

D.1.19 Display ECM fixes or contact bearings generated by remote units.

D.1.20 View position of contacts with respect to remote detecting units positions.

D.1.21 Exclude remote contacts not required for redisplay from GPDC redisplay memory.

D.1.22 Request transfer of data from another aircraft.

D.1.23 Review data after transfer to select specific information categories for future reference.

DUTY E.0.0: NAVIGATION DATA EXCHANGE

Sub-Duty E.1.0: Exchange flight plan information.

Tasks:

E.1.1 Store/retrieve geographic coordinates of specific points (PIM, FTP, OPT).

E.1.2 Store/retrieve required airspeeds.

E.1.3 Store/retrieve altitudes.

E.1.4 Store/retrieve reporting times.

E.1.5 Store/retrieve fuel management parameters.

Sub-Duty E.2.0: Exchange navigation parameter information.

Tasks:

E.2.6 Store/retrieve geographic coordinates of aircraft's current position.

E.2.7 Store/retrieve x-y coordinates of aircraft's current position.

E.2.8 Store/retrieve x-y reference point.

E.2.9 Store/retrieve identity of navigation equipment providing primary data.

E.2.10 Store/retrieve value of BIAS corrections.

E.2.11 Store/retrieve value of System Drift correction.

E.2.12 Store/retrieve time last BIAS correction update.

E.2.13 Store/retrieve time of last System Drift correction update.

E.2.14 Store/retrieve combinations of navigation modes available.

E.2.15 Store/retrieve numeric priority of each combination.

DUTY F.0.0: GEONAVIGATION

Sub-Duty F.1.0: Determine the significant GEONAV reference data governing the employment and utilization of the System.

Tasks:

F.1.1 Reference and observe System computed geographic coordinates of any point on the tactical display area.

F.1.2 Display a symbol at the aircraft's position, and subsequently display additional "time interval" symbols at the interval entered.

F.1.3 Observe the position of a specific set of geographic coordinates on the tactical display.

F.1.4 Display the updated aircraft present position; magnitude and direction of correction; and correction to system drift velocity.

F.1.5 Display the updated aircraft's System computed position utilizing range and bearing input data from TACAN.

F.1.6 Display the updated aircraft's System computed position utilizing range and bearing position data from RADAR.

F.1.7 View current flight plan FTP coordinates and simultaneously observe the FTP symbols on the tactical display.

F 1.8 Delete/modify/designate additional flight plan FTPs.

DUTY G.0.0: TACTICAL NAVIGATION

Sub-Duty G.1.0: Determine the significant TACNAV reference data governing the employment and utilization of the System.

Tasks:

G.1.1 Initiate System position computations in a relative reference frame.

G.1.2 Display aircraft positions based on the computed relative ground track.

G.1.3 Revise bias vector values utilized for stabilization of the tactical plot.

G.1.4 Display calculated bias without application of the automatic bias acceptance feature.

G.1.5 Update the TACNAV position of the aircraft with respect to a moving reference.

G.1.6 Institute System computations and subsequent display corrections to compensate for apparent buoy pattern distortion produced by navigation system error.

G.1.7 Select a specific sonobuoy or multiple sonobuoys for a position update utilizing the sonobuoy reference system (SRS).

DUTY H.0.0: TACTICAL PROCESS DATA EXCHANGE

Sub-Duty H.1.1: Exchange flight summary information.

Tasks:

H.1.1 Store/retrieve date, month, year, flight scheduled for launch.

H.1.2 Store/retrieve squadron identity.

H.1.3 Store/retrieve event number.

H.1.4 Store/retrieve call signs - nontactical/tactical.

H.1.5 Store/retrieve crew number

H.1.6 Store/retrieve aircraft number.

H.1.7 Store/retrieve time of take-off launch.

H.1.8 Store/retrieve location and identity of departure site.

H.1.9 Store/retrieve number of aircraft relieved as briefed and modified.

H.1.10 Store/retrieve squadron number of aircraft relieved as briefed and modified.

H.1.11 Store/retrieve on-station time.

H.1.12 Store/retrieve off-station time.

H.1.13 Store/retrieve boundaries of assigned area.

H.1.14 Store/retrieve number of aircraft relieved by as briefed modified.

H.1.15 Store/retrieve squadron number of aircraft relieved by as briefed/modified.

H.1.16 Store/retrieve time of recovery/landing.

H.1.17 Store/retrieve location and identity of landing site.

H.1.18 Store/retrieve serial number of preflight data tape.

Sub-Duty H.2.0: Exchange reference data information.

Tasks:

H.2.19 Store/retrieve signature characteristics of submarines detected during the mission.

H.2.20 Store/retrieve signature characteristics of surface traffic detected during the mission.

H.2.21 Store/retrieve signature characteristics of submarines detected previously in the mission area.

H.2.22 Store/retrieve signature characteristics of surface traffic detected previously in the mission area.

H.2.23 Store/retrieve signature characteristics of submarines anticipated to be detected in the assigned area.

H.2.24 Store/retrieve signature characteristics of surface traffic anticipated to be detected in the assigned area.

H.2.25 Store/retrieve discrete broadband, and audio characteristics of submarines.

H.2.26 Store/retrieve changes in speed effects on discrete, broadband, and audio characteristics of submarines.

H.2.27 Store/retrieve aspect effects on discrete, broadband, and audio characteristics of submarines.

H.2.28 Store/retrieve mode effects on discrete, broadband, and audio characteristics of submarines.

H.2.29 Store/retrieve operating depth effects on discrete, broadband, and audio characteristics of submarines.

H.2.30 Store/retrieve discrete, broadband, and audio characteristics of surface vessels.

H.2.31 Store/retrieve changes in speed effects on discrete, broadband, and audio characteristics of surface vessels.

H.2.32 Store/retrieve aspect effects on discrete, broadband and audio characteristics of surface vessels.

H.2.33 Store/retrieve mode effects on discrete, broadband, and audio characteristics of surface vessels.

H.2.34 Store/retrieve operating depth effects on discrete, broadband, and audio characteristics of surface vessels.

Sub-Duty H.3.0: Exchange meteorological information.

Tasks:

H.3.35 Store/retrieve data annotation indicating source (i.e., forecast/observed).

H.3.36 Store/retrieve data annotation indicating effective time period.

H.3.37 Store/retrieve significant positions/areas affected by weather.

H.3.38 Store/retrieve coverage type, altitudes (base/top) of clouds.

H.3.39 Store/retrieve winds on the surface and aloft at altitudes of significant changes.

H.3.40 Store/retrieve visibility.

H.3.41 Store/retrieve turbulence.

H.3.42 Store/retrieve sea state.

H.3.43 Store/retrieve wave height and direction.

H.3.44 Store/retrieve refractivity index/inversion layers altitude envelopes of ducting; and the identity of radiation sources affected.

Sub-Duty H.4.0: Exchange oceanographic information.

Tasks:

H.4.45 Store/retrieve parameters describing thermal and bottom conditions.

H.4.46 Store/retrieve convergence zones within assigned area.

H.4.47 Update BT data after receiving a SWAP DATA DUMP.

H.4.48 Annotate BT buoy deployment time.

H.4.49 Annotate BT buoy deployment position

H.4.50 Store/retrieve acoustic range predictions.

H.4.51 Store/retrieve position of all significant subsurface objects in assigned area.

H.4.52 Store/retrieve size of all significant subsurface objects in assigned area.

H.4.53 Store/retrieve depth of all significant subsurface objects in assigned area.

H.6.69 Store/retrieve time of last buoy-record mode situation.

H.6.70 Store/retrieve directed/recommended field monitor sequence.

H.6.71 Store/retrieve long life buoy locations.

H.6.72 Store/retrieve long life buoy types.

H.6.73 Store/retrieve long life RF channels.

H.6.74 Store/retrieve deployment time and life remaining for long life buoys.

Sub-Duty H.7.0: Exchange submarine target data information.

Tasks:

H.7.75 Store/retrieve contact number.

H.7.76 Store/retrieve track number.

H.7.77 Store/retrieve class/type/nationality.

H.7.78 Store/retrieve last known position (L/L).

H.7.79 Store/retrieve radius of area of probability.

H 7.80 Store/retrieve zone time.

H.7.81 Store/retrieve identity of unit and sensor type, last holding contact.

H.7.82 Store/retrieve maximum operating depth and detected/estimated value of present depth of target.

H.7.83 Store/retrieve maximum operating speed capability and estimated/detected value of present speed.

H 7.84 Store/retrieve detected/estimated target course reference to True North.

H.7.85 Store/retrieve type emitter, PW, PRR, etc.

H.7.86 Store/retrieve displacement in tons and average/known moment in gamma.

H.4.54 Store/retrieve description of all significant subsurface objects within assigned area.

H.4.55 Store/retrieve target range prediction.

H.4.56 Store/retrieve target depth prediction.

H.4.57 Store/retrieve target position prediction.

H.4.58 Store/retrieve recommended buoy pattern configuration.

Sub-Duty H.5.0: Exchange acoustic sensor contact information.

Tasks:

H.5.59 Store/retrieve time period contact was held for passive followed by active S/B contacts.

H.5.60 Store/retrieve identity for passive followed by active S/B contacts.

H.5.61 Store/retrieve mode of operation for passive followed by active S/B contacts.

H.5.62 Store/retrieve speed for passive followed by active S/B contacts.

H.5.63 Store/retrieve target characteristics detected for passive followed by active S/B contacts.

Sub-Duty H.6.0: Exchange sonobuoy field information.

Tasks:

H.6.64 Store/retrieve moored buoy location.

H.6.65 Store/retrieve RF channels of moored buoys.

H.6.66 Store/retrieve interrogation channels of moored buoys.

H.6.67 Store/retrieve date and time displayed for moored buoys.

H.6.68 Store/retrieve expected life of moored buoys.

H.7.87 Store/retrieve most notable discrete and broadband data that is speed or aspect dependent.

H.7.88 Store/retrieve identity and known characteristics of acoustic or other forms of decoys.

H.7.89 Store/retrieve description of salient features of hull, sail, and appendages.

DUTY 1.0.0: INITIAL CONTACT ACQUISITION

Sub-Duty 1.1.0: Acquire initial contact data on targets.

Tasks:

1.1.1 Display predicted detection range values for the predominant frequencies of a specified target.

1.1.2 Designate the pattern reference point via a hook/LL entry.

1.1.3 Designate the search pattern composition.

1.1.4 Designate the desired orientation bearing (ref-True North).

1.1.5 Select buoy type/quantity.

1.1.6 Delete buoys not required in the pattern.

1.1.7 Enter spacing distance desired between buoys in pattern selected.

1.1.8 Initiate the transfer of steering command signals to the AFCS and provide range and bearing data to the near . FTP.

1.1.9 Terminate/modify deployment sequence.

1.1.10 Select and utilize pre-programmed sonobuoy pattern configurations.

1.1.11 Request a System-computed track to be flown during the monitor of a pattern of sonobuoys.

I.1.12 Review or modify parameters contained within the Submarine Target Data tableau while operating in SEARCH mode.

I.1.13 Obtain program steering and selected buoy release at the position designated by the "hook".

I.1.14 Obtain program tactic appropriate to the existing environmental conditions, mission area size, surface contacts and target characteristics.

I.1.15 Specify (selectively) LOFAR acoustic processing for the buoys designated for deployment or already deployed.

I.1.16 Specify (selectively) DIFAR acoustic processing for the buoys designated for deployment or already deployed.

I.1.17 Monitor audio information from selected sonobuoys.

DUTY J.0.0: LOCALIZATION

Sub-Duty J.1.0: Reduce the size of the "area of uncertainty" associated with the target's location.

Tasks:

J.1.1 Review the calculated range predictions applicable to CASS and DICASS sonobuoys and enter BT data.

J.1.2 Request a program-generated buoy pattern configured to contain the target within a specified probability area.

J.1.3 Obtain a program-recommended tactic appropriate to the existing environmental conditions, mission area size, surface contacts, and target characteristics.

J.1.4 Obtain program steering and selected buoy release at the position designated by the hook.

J.1.5 Request program-derived steering commands be sent to the AFCS to maintain a circular flight path of radius coincident with active sonobuoy range values.

DUTY K.0.0 TRACKING/ATTACK

Sub-Duty K.1.0: Tracking or attack of targets.

Tasks:

K.1.1 Request program derived steering commands be sent to the AFCS to maintain a cloverleaf flight path of radius coincident with active sonobuoy range.

K.1.2 Request program-generated steering for the AFCS to maneuver the aircraft in the optimum cloverlead pattern oriented to the computed target course and translated by the computed target speed.

K.1.3 Request a calculation of weapon effectiveness (kill probability against a specified target).

K.1.4 Designate a weapon release point when kill probability calculation is not applicable.

K.1.5 Review or modify parameters contained within the Submarine Target Data tableau while operating in the LOCAT mode.

K.1.6 Monitor audio information from selected sonobuoys.

Sub-Duty K.2.0: Employ programmed aids in support of sensor data acquisition, correlation, and analysis.

Tasks:

K.2.7 Obtain a manually derived contact correlation.

K.2.8 Obtain a program derived contact correlation.

K.2.9 Obtain a program-derived fix.

K.2.10 Obtain a fix manually using the "hook".

K.2.11 Designate a position as a reference point for the Pilot or the AFCS.

K.2.12 Obtain a program derived target area.

K.2.13 Select a program generated range circle of expanding radius about an origin.

K.2.14 Observe a continuously updated target position estimate.

K.2.15 Request display of the last four fixes used in the generation of a given track.

K.2.16 View program-derived past or future target position estimates.

K.2.17 Request program computation and display of the predicted target position at which the aircraft and target's position will coincide given that the most expedient flight path is flown.

DUTY L.0.0: TACTICAL DECISION AID

Sub-Duty L.1.0: General tactical utilization of the system.

Tasks:

L.1.1 Request display of all ECM contacts acquired during the mission.

L.1.2 Request display of all RADAR contacts acquired during the mission.

L.1.3 Request display of all contacts acquired by DiFAR and LOFAR buoys during the mission.

L.1.4 Request display of all contacts acquired on active sonobuoys during the mission.

L.1.5 Request display of all MAD contacts gained throughout the mission.

L.1.6 Request display of all visual contact entries.

L.1.7 Request display of all LLLTV contact entries.

L.1.8 Request display of all FLIR contacts.

L.1.9 Request simultaneous display of the remote contact data derived by the same sensor category as selected for on-system contacts.

L.1.10 Request for display additional on-system contact categories after the REMOTE CONTACTS option has been activated, without displaying the additional remote units contacts of the same category.

L.1.11 Designate by hook actuation contact data to be retained on the tactical display after the option selection which presented the data is deactivated.

L.1.12 Request display of all identified Submarine Contact Data obtained during the mission.

L.1.13 Request display of all surface contact data obtained during the mission.

L.1.14 Request display of all identified airborne contact data.

L.1.15 Request display of all data detected from an as yet unidentified vehicle class.

L.1.16 Request displaying of all data utilized in the formulation of the tract hook.

L.1.17 Request display of the last fixes used in the generation of a given track.

L.1.18 Request simultaneous displaying of the remote track data of similar identification as that selected for on-system tracks.

L.1.19 Request additional on-system track option selections subsequent to the activation of the REMOTE TRACKS option, without obtaining simultaneous display of similar track categories received from remote units.

L.1.20 Designate by hook actuation a track to be retained on the tactical display after the option selection which presented the data is deactivated.

L.1.21 Request display of a circle of radius specified by key set entry.

L.1.22 Request display of a circle of origin determined by the hook position when activated and of a radius determined by the present position of the hook.

L.1.23 Determine the range and bearing from the hooked aircraft position to a point designated by the hook position prior to the selection.

L.1.24 Produce display of a circle of increasing radius about a point designated by the hook position.

L.1.25 Request a reference symbol to be deposited at the position of the preceding hook action.

L.1.26 Select radar horizon conic constructed from inputs of altitude, antenna tilt, and radar mode parameters; or a MAD range ring of size determined from aircraft altitude, assessed MAD sensitivity and a nominal detection range value; or both.

L.1.27 Display data associated with the amplification of various displayed sensor and contact data.

L.1.28 Request conversion of a displayed dynamic line segment or conic into a static display.

L.1.29 Initiate program-generated actions to carry out a buoy deployment [illegible] aircraft maneuver calculated by the program to satisfy the tactical requirements of a specific situation.

L.1.30 Request a BT buoy for deployment.

L.1.31 Request a DIFAR buoy type for deployment.

L.1.32 Request a LOFAR buoy selection for deployment which has been set for 300 feet and 1 hour life.

L.1.33 Request a DICASS buoy for deployment.

L.1.34 Request a LOFAR buoy selection for deployment which has been set for a predetermined hour life.

L.1.35 Request CASS buoy for deployment.

L.1.36 Designate whether all odd or all even RF channels are to be used in subsequent program channel recommendations.

L.1.37 Override the channels selections recommended by the program.

L.1.38 Request program steering in selected sonobuoy deployment at the position designated by the hook.

L.1.39 Command the program to effect an immediate deployment of the buoy type selected.

L.1.40 Select and release sonobuoys in an off line mode delivery.

L.1.41 Select and release sonobuoys in an off line mode.

DUTY M.0.0: SENSOR DATA EXCHANGE

Sub-Duty M.1.0: Exchange RF assignment status information.

Tasks:

M.1.1 Store/retrieve deployed sonobuoys listed in RF channel numerical order.

M.1.2 Store/retrieve processing mode and originator of mode assignment.

M.1.3 Store/retriev e analog acoustic channels to which acoustic data is being put.

M.1.4 Store/retrieve state of the RF Carrier signal.

M.1.5 Store/retrieve current assignment of buoy data displays.

M.1.6 Store/retrieve current assignment of non-acoustic/ acoustic buoy data displays.

Sub-Duty M.2.0: Exchange radar information.

Tasks:

M.2.7 Store/retrieve radar contact numbers.

M.2.8 Store/retrieve radar contact track numbers.

M.2.9 Store/retrieve radar contact identification.

M.2.10 Store/retrieve time of radar contacts.

M.2.11 Store/retrieve radar contact positions (L/L).

M.2.12 St. re/retrieve radar contacts' bearing and range from aircraft.

M.2.13 Store/retrieve radar mode used for acquired radar contacts.

M.2.14 Store/retrieve velocity vector of last contacts.

M.2.15 Store/retrieve corresponding track numbers for radar contact targets from other sensors' contacts.

M.2.16 Store/retrieve radar false alarm rate status.

M.2.17 Store/retrieve radar power settings status.

M.2.18 Store/retrieve Scan Converter Storage selection status.

M.2.19 Store/retrieve radar mode status.

M.2.20 Store/retrieve PW status.

M.2.21 Store/retrieve PRF status.

M.2.22 Store/retrieve antenna tilt (radar) status.

M.2.23 Store/retrieve PRF status.

M.2.24 Store/retrieve mode and code identity assignments for units which may be detected.

M.2.25 Store/retrieve mode and codes for unit activity.

M.2.26 Store/retrieve mode and codes for non-military aircraft.

M.2.27 Store/retrieve receiver gain status.

M.2.28 Store/retrieve video gain status.

M.2.29 Store/retrieve scan presentation.

M.2.30 Store/retrieve sector width status.

M.2.31 Store/retrieve sector bearing.

M.2.32 Store/retrieve heading marker and range ring intensity

M.2.33 Store/retrieve target designator symbol intensity.

M.2.34 Store/retrieve antenna stabilization status.

Sub-Duty M.3.0: Exchange ECM Information.

Tasks:

M.3.35 Store/retrieve target track numbers of ECM contacts.

M.3.36 Store/retrieve identity of the emitter contacted by ECM.

M.3.37 Store/retrieve characteristics detected from ECM contacts.

M.3.38 Store/retrieve platform of ECM contacts.

M.3.39 Store/retrieve mode of operation of ECM contacts.

M.3.40 Store/retrieve initial acquisition data for ECM contacts.

M.3.41 Store/retrieve corresponding contact/track numbers of the target from other detecting sensors.

M.3.42 Store/retrieve ECM detection frequency bands.

M.3.43 Store/retrieve Systems' action relative to each band.

M.3.44 Store/retrieve emitter parameter value ranges which define the unprocessable emitters for ECM subsystem.

M.3.45 Store/retrieve limits to be automatically invoked when ECM processor is overloaded with signals.

M.3.46 Store/retrieve specific parameters of emitter which are to be excluded from processing by the ECM subsystem.

M.3.47 Store/retrieve parameters which describe uniquely specific emitters (ECM).

M.3.48 Store/retrieve platform of specific emitters (ECM).

M.3.49 Store/retrieve nationality of specific emitters.

M.3.50 Store/retrieve emitter designation associated with each set (ECM).

M.3.51 Store/retrieve parameters of all emitters associated with a defined threat emitter platform (ECM).

M.3.52 Store/retrieve parameters other emitters not associated with a defined threat emitter platform (ECM)

M.3.53 Store/retrieve parameters which describe emitters installed in hostile units ECM).

M.3.54 Store/retrieve parameters which describe emitter installed in supporting ASW or other military units (ECM).

M.3.55 Store/retrieve parameters which describe emitters installed aboard non-military units (ECM).

M.3.56 Store/retrieve contact numbers and parameters of all ECM contacts of current interest.

M.3.57 Store/retrieve last contact data obtained for ECM contacts.

Sub-Duty M.4.0: Exchange visual/photo information,

Tasks:

M.4.58 Store/retrieve contact and track number of visual contact entries.

m.4.59 Store/retrieve identity and descriptive information related to visual contact entries.

M.4.60 Store/retrieve geographic position of visual contact entries.

M.4.61 Store/retrieve course and speed of visual contact entries.

M.4.62 Store/retrieve frame numbers and camera settings of photos taken.

M.4.63 Store/retrieve aircraft altitude at time of visual/photo contact.

M.4.64 Store/retrieve aircraft speed at time of visual/photo contact.

M.4.65 Store/retrieve aircraft heading at time of visual/photo contact.

M.4.66 Store/retrieve track numbers of contact with the same target from other sensors.

M.4.67 Store/retrieve aperture settings.

M.4.68 Store/retrieve shutter speeds applied.

M.4.69 Store/retrieve remaining photo frames.

M.4.70 Store/retrieve lens control angles selected.

Sub-Duty M.5.0: Exchange FLIR information.

Tasks:

M.5.71 Store/retrieve FLIR contacts' track numbers.

M.5.72 Store/retrieve FLIR contacts' identity and related descriptive information.

M.5.73 Store/retrieve FLIR contacts' geographic positions.

M.5.74 Store/retrieve range and relative bearing from aircraft at time of each FLIR contact entry.

M.5.75 Store/retrieve aircraft speed at time of FLIR contact entries.

M.5.76 Store/retrieve aircraft heading at time of FLIR contact entries.

M.5.77 Store/retrieve aircraft altitude at time of FLIR contact entries.

M.5.78 Store/retrieve field of view selection at time of FLIR contact.

M.5.79 Store/retrieve track numbers of contact with the target from other sensors shall be displayed for each FLIR contact.

M.5.80 Store/retrieve FLIR mode.

M.5.81 Store/retrieve FLIR gain settings.

M.5.82 Store/retrieve FLIR field of view.

M.5.83 Store/retrieve FLIR image polarity.

M.5.84 Store/retrieve number of FLIR frames remaining.

Sub-Duty M.6.0: Exchange MAD information.

Tasks:

M.6.85 Store/retrieve contact and/or track number of MAD contacts.

M.6.86 Store/retrieve identity of MAD contacts.

M.6.87 Store/retrieve position of MAD contacts.

M.6.88 Store/retrieve aircraft altitude from radar altimeter at time of MAD contact reference.

M.6.89 Store/retrieve aircraft true heading at time of MAD contact reference.

M.6.90 Store/retrieve aircraft ground speed in knots at time of MAD contact reference.

M.6.91 Store/retrieve maximum intensity of anomally in gamma at time of MAD contact reference.

M.6.92 Store/retrieve contact heading referenced to True North at time of MAD contact reference.

M.6.93 Store/retrieve contact depth-in-feet at time of MAD Contact reference.

M.6.94 Store/retrieve submarine class and type used to process MAD signal data.

M.6.95 Store/retrieve depth of target used to process MAD signal data.

M.6.96 Store/retrieve speed of target used to process MAD signal data.

M.6.97 Store/retrieve magnetic moment used to process MAD signal data.

M.6.98 Store/retrieve probability of detection.

DUTY N.0.0: ACOUSTIC SENSOR COMMAND AND CONTROL

Sub-Duty N.1.0: Control sonobuoy-command.

Tasks:

N.1.1 Identify by hook action the program of the buoy(s) that are to subsequently receive command tone(s) transmissions.

N.1.2 Remove buoy(s) from the command signal reference list.

N.1.3 Request an appropriate program-assembled command tone transmission to the buoy designated by hook selection in order to turn on the buoy's VHF transmitter.

N.1.4 Request program actions to revert the hooked buoy's VHF transmitter to the quiet state.

N.1.5 Request program-assembled command signal tone transmissions to terminate REPLAY or RECORDING of hook designated moored buoys and commence transmission of real-time data.

N.1.6 Request program-assembled command signal tone transmissions to terminate REPLAY or LISTEN actions of hook designated moored buoys and commence recording.

N.1.7 Request a program-assembled command tone transmission to release hydrophone cable on the buoy designated by the hook position.

N.1.8 Request a program-assembled command tone transmission to scuttle the buoy designated by the hook position.

N.1.9 Display sonobuoys deployed utilizing TACTICAL PLOT function concurrent with the tactical plot already displayed.

N.1.10 Request program-assembled command signal tone transmissions to terminate acoustic recording of hook designated moored buoys and commence VHF transmission of the previously recorded data.

DUTY O.0.0: NON-ACOUSTIC SENSOR CONTROL

Sub-Duty O.1.0: Control non-acoustic sensors.

Tasks:

O.1.1 Assume functional control over the radar.

O.1.2 Observe/modify the radar parameters of display being applied.

O.1.3 Select mode 1 search or mode 2 navigation or mode 3 high resolution.

O.1.4 Select value of transmitter output power, receiver gain, and false alarm rate for other than the nominal values.

O.1.5 Designate a sexter to be scanned centered on the position of the hook.

O.1.6 Control the antenna in azimuth and elevation to focus on the position designated by the hook.

O.1.7 Control and display the antenna tilt angle using the track ball position as reference.

O.1.8 Employ normal radiation.

O.1.9 Employ dummy load.

O.1.10 Employ intermittent radiation.

O.1.11 Obtain program translation of an IFF reply, display the numeric mode and code, identify FRIEND or FOE.

O.1.12 Enter the various time durations required to establish the optimum display integration.

O.1.13 Enter automatically new contact data.

O.1.14 Update radar contacts.

O.1.15 Select ECM contacts, by categories, for displaying on the MPD.

O.1.16 Record in digital format detected emitter characteristics from selected sources.

O.1.17 Enter specific emitter parameters and obtain program assistance in identifying the platform type in which the emitter is installed.

O.1.18 Transmit specific ECM contact via data link.

O.1.19 Correlate ECM bearings with contacts developed from other sensors by displaying complete tactical plots over the ECM-derived information.

O.1.20 View the complete tactical plot initially, independent of ECM bearings and selectively display the bearings by contact #4 typed entry.

O.1.21 View of modify the emitter parameters and threat frequency bands entered via the preflight data tape.

O.1.22 Modify the signal limiting and/or inhibiting values entered from the preflight data tape.

O.1.23 Correct initial ECM identity category assignment.

O.1.24 Re-select the limits established by the preflight data for ECM.

O.1.25 Control the deployment and storage of the FLIR turret assembly.

O.1.26 Select manual or auto-track modes of target positioning within the FLIR viewing field.

O.1.27 Select the available FLIR alternative position.

O.1.28 Present the video and range/bearing to the position of focus on the TACCO's display.

O.1.29 View targets as normal mode or in the negative mode.

O.1.30 Activate either a wide or narrow viewing field.

O.1.31 Enter FLIR data into the system when contact has been acquired.

O.1.32 Control turret position by movement of TRACKBALL.

O.1.33 Engage computer control of turret position referenced to a hooked target on either the radar for tactical plots.

O.1.34 Reference a single frame of film for post-flight analysis.

O 1.35 Display film quantity remaining when FLIR is active.

O.1.36 Select a continuous photograph sequence synchronized to the FLIR display.

O.1.37 Designate modes for program activation, compensation, operational, test, and analogue playback.

O.1.38 Display both manual "A" and automatic MAD traces and associated annotation.

O.1.39 Review previous MAD data after the (A) in analogue (T) in tape; and (P) in playback modes are designated.

O.1.40 Utilize movable verticle curser in conjunction with display calibration.

O.1.41 View any of the three-minute segments which comprise the last 18 minutes of MAD trace content.

O.1.42 Maintain a static (referenced to time) display to analyze MAD information further prior to its passage beyond the three-minute display duration.

O.1.43 Verify or establish a calibrated MAD display.

O.1.44 Review all auto-detections for ADD/DELETE action prior to system acceptance.

DUTY P.0.0; ARMAMENT DATA EXCHANGE

Sub-Duty P.1.0: Exchange search stores information.

Tasks:

P.1.1 Store/retrieve buoy type availability.

P.1.2 Store/retrieve RF type availability.

P.1.3 Store/retrieve AF type availability.

P.1.4 Store/retrieve launch tube load condition.

P.1.5 Store/retrieve reserved status condition.

P.1.6 Store/retrieve RF channels assigned for monitor.

P.1.7 Store/retrieve launch tube operational condition.

P.1.8 Store/retrieve buoy types deployed/inserted.

P.1.9 Store/retrieve depth/life settings (buoys).

P.1.10 Store/retrieve RF signal level.

P.1.11 Store/retrieve RF receiver status.

P.1.12 Store/retrieve actual life remaining (buoys).

P.1.13 Store/retrieve deployment time (buoys).

P.1.14 Store/retrieve position (L/L) of buoys.

P.1.15 Store/retrieve aircraft altitude and TAS at deployment time (buoys).

P.1.16 Store/retrieve malfunction descriptions of search stores.

Sub-Duty P.2.0: Exchange Weapons Information.

Tasks:

P.2.17 Store/retrieve weapon types available.

P.2.18 Store/retrieve weapon type quantity.

P.2.19 Store/retrieve station number load condition.

P.2.20 Store/retrieve operating condition.

P.2.21 Store/retrieve type of arming/weapon settings.

P.2.22 Store/retrieve weapon types deployed.

P.2.23 Store/retrieve deployment time (weapons).

P.2.24 Store/retrieve weapon control settings.

P.2.25 Store/retrieve aircraft deployment altitude (weapons).

P.2.26 Store/retrieve aircraft deployment TAS (weapons).

P.2.27 Store/retrieve aircraft deployment True Heading (weapons).

P.2.28 Store/retrieve deployment position (L/L) (weapons).

P.2.29 Store/retrieve weapon effectiveness descriptions.

DUTY Q.0.0: ARMAMENT CONTROL

Sub-Duty Q.1.0: Exercise on-line control over armament system.

Tasks:

Q.1.1 Request program assistance in selection, arming, and release of conventional depth bombs.

Q.1.2 Request program assistance in selection, arming, and release of torpedoes.

Q.1.3 Request in conjunction with the pilot program assistance in the selection, arming, and deployment of nuclear weapons.

Q.1.4 Request program assistance in selection, arming, and release of mines.

Q.1.5 Request program assistance in selection and release of practice bombs loaded on special multiple bomb racks.

Q.1.6 Designate the desired splash point of weapons selected for release.

Q.1.7 Release manually weapons.

DUTY R.0.0: AUTOMATIC DATA PROCESSOR DATA EXCHANGE

Sub-Duty R.1.0: Exchange Subsystem status information with the System.

Tasks:

R.1.1 Store/retrieve significant System components defective/ inoperative.

R.1.2 Store/retrieve description of effect on System capability.

R.1.3 Store/retrieve alternatives available.

DUTY S.0.0: INITIALIZATION

Sub-Duty S.1.0: Initialization of system.

Tasks:

S.1.1 Request computer acceptance, transfer, and storage of the contents of the operational program into the appropriate memory areas.

S.1.2 Enter the appropriate time reference date-time-group to be referenced, and a mark (EOM) at the precise time previously entered.

S.1.3 Review hard copy printout of preflight data to verify contents and validate accuracy of certain specific information.

S.1.4 Direct the S-System's aircrew-conducted preflight after preflight briefing and checkout of program tape.

DUTY T.0.0: RECOVERY

Sub-Duty T.1.0: Recovery of system.

Tasks:

T.1.1 Re-establish an accurate program configuration after either a computer power failure or an equipment failure.

T.1.2 Reload the program and extract automatically the most recent safe data recorded on the storage drums or magnetic tape for

T.1.3 Refresh the program in computer with last safe "data block" when complete reload is not needed.

T.1.4 Designate crew member control of sensors for program applications.

T.1.5 Access a second order grouping of option selections pertinent to program debugging.

T.1.6 Request recovery of additional blocks or "safe" data to the computer from the drums.

T.1.7 Obtain a manual update of aircraft position time and changes in system between last safe "data block" and recovery time.

T.1.8 Select the safe "data block" preceding the last block re-entered into computer.

DUTY U.0.0: DEGRADED OPERATION

Sub-Duty U.1.0: Operation of degraded system.

Tasks:

U.1.1 Display the tableau listing equipment status as determined by the IFPM routine.

U.1.2 Request both passive and active BITE test results from all subsystems that can comply.

U.1.3 Request a program recheck of indicated subsystem malfunctions.

U.1.4 Designate subsystems that are to be deleted from system monitor and control.

U.1.5 Re-instate program access and control over a subsystem previously deleted automatically.

U.1.6 Reapportion between other crewmen tasks performed at a completely inoperative crew station.

U.1.7 Re-define the task priorities to identify most important to continued mission prosecution.

U.1.8 Indicate portions of the operational program to the system which must be available for continued effective employment of System.

DUTY V.0.0: TERMINATION

Sub-Duty V.1.0: Termination of system.

Tasks:

V.1.1 Reconfigure all subsystems to optimum state for flight termination.

V.1.2 Delete all classified data from the DMTU tape and program storage areas.

V.1.3 Close out the flight record data and deenergize on-line controlled subsystems.

INVENTORY ANALYSIS

The following steps outline the procedures involved in analyzing the inventory data.

1. The inventory was submitted to two East Coast Replacement Air Group (VP-30) instructors who were to evaluate each task in terms of whether they did or did not perform the task. A simple check (√) indicated that the task was performed in an approximately identical manner as stated, and designated it as being system applicable (SA). However, tasks identified as being system applicable could be performed primarily through an ADP subsystem or performed by means other than through an ADP subsystem. If it had an ADP subsystem capability, it was designated as having a system capability (SC). Alternatively, if it had no ADP subsystem capability, it was designated as having no (system) capability (NC). If the task was unknown to the RAG instructors or had no known application to P-3C TACCO functions, a non-system applicable (NSA) designation was assigned.

2. On the basis of the East Coast RAG review, the procedures were judged to be satisfactory, and a second version of the inventory was evaluated by two West Coast RAG (VP31) instructors.

3. The inventory then underwent the same evaluation process by members of the Lockheed/California Company's Systems Integration Lab. (S-3).

4. The responses were extracted and placed into a format for tabulation. These appear as raw data tables for each subsystem in Appendix A. The data reflect the frequency of (SC), (NC), and (NSA) responses within duty subduties, and across aircraft by RAG squadrons.

5. East and West Coast RAG squadrons (P-3C) were combined and conflicting responses were resolved in favor of whichever command indicated a system capability. Conflicting items were recorded for separate analysis.

6. The task inventories completed by the previously mentioned S-3 source and P-3C source were examined separately. Each task statement was categorized as being SC, NC, or NSA for the S-3 and P-3C individually. The categories for each task statement were then combined so that each task statement could fall into one of nine possible S-3 vs. P-3 dichotomous categories or Commonality Analysis Index Codes (CAIC). They are as follows:

a.	SC/SC = 1	d.	NC/NC = 4	g.	NSA/SC = 7
b.	SC/NC = 2	e.	SC/NSA = 5	h.	NSA/NC = 8
c.	NC/SC = 3	f.	NC/NSA = 6	i.	NSA/NSA = 9

Table III more clearly defines these codes and Tables (IV-IX) comprise the Commonality Analysis Index for all tasks reflected in the inventory. These tables are the basic reference for this study and are intended to serve as a prime reference for establishing realistic S-3 training objectives and fleet training requirements. For example, the answer to a question such as, "What communication subsystem tasks are primarily automated function related for both aircraft?", can be found under the first column of the index (CAIC 1, SC/SC).

7. The tasks within each duty were summed and tabulated across all of the nine categories of the Index. The summary of these data is shown in Table A VII of Appendix A.

8. The Commonality Analysis Index was used to derive the various conditions of commonality between the S-3 and P-3C positions. These derivations for three commonality analysis levels are shown in Tables B I, B II and B III of Appendix B.

RESULTS

Three levels of commonality analysis were performed in this study. The first level was based on system applicability of inventory tasks to the S-3 and/or P-3C. The second level involved system capability between the two aircraft. The third level of analysis of commonality involved system identity, similarity and specificity for the S-3 and/or P-3C.

LEVEL I -- SYSTEM APPLICABILITY/NO SYSTEM APPLICABILITY BETWEEN AIRCRAFT.

An examination of Table X shows the following:

A. Codes (CAIC) 1 through 8 represent 446 tasks that apply to the S-3 or P-3C, or both, in terms of meeting system requirements. They comprise 92.9% of the total inventory.

B. CAIC 9 represents 34 tasks of the remaining 7.1% of the total inventory that have no system requirement application to either the S-3 or P-3C. Those instances where a task statement was identified as having no system applicability to the S-3 represent subsequent developmental revisions of design stage requirements upon which the preliminary task inventory was based.

C. Codes 1 through 4 encompass 382 tasks that apply to both the S-3 and P-3C. They comprise 86% of all the tasks applicable to the S-3 and/or P-3C.

D. Codes 5 and 6 represent 58 tasks that apply to the S-3 only. They comprise 13% of all the tasks applicable to the S-3 and/or P-3C.

E. Codes 7 and 8 show 6 tasks that apply to P-3C only. They comprise 1% of all the tasks applicable to the S-3 and/or P-3C.

LEVEL II -- SYSTEM CAPABILITY/NO (SYSTEM) CAPABILITY BETWEEN AIRCRAFT.

Table XI presents the following findings for the automated function related tasks and non-automated function related tasks.

A. Automatic Function Related Tasks.

1. CAIC 1 represents 225 tasks that are primarily automated function related for both the S-3 and P-3C. They comprise 60% of all the tasks that have a system capability in the S-3 and/or P-3C.

2. Codes 2 and 5 reflect 145 tasks that are primarily automated function related for the S-3 only. They comprise 38% of all the tasks that have a system capability in the S-3 and/or P-3C.

3. Codes 3 and 7 encompass 7 tasks that are primarily automated function related for the P-3C only. They comprise 2% of all the tasks that have a system capability in the S-3 and/or P-3C.

B. Non-automated Function Related Tasks.

1. CAIC 4 represents 62 tasks that are primarily non-automated function related for both the S-3 and P-3C. They comprise 38% of all the tasks that do not have a system capability in the S-3 and/or P-3C.

2. Codes 3 and 6 reflect 8 tasks that are primarily non-automated function related for the S-3 only. They comprise 5% of all the tasks that do not have a system capability in the S-3 and/or P-3C.

3. Codes 2 and 8 represent 94 tasks that are primarily non-automated function related for the P-3C only. They comprise 57% of all the tasks that do not have a system capability in the S-3 and/or P-3C.

LEVEL III -- SYSTEM IDENTITY/SIMILARITY/SPECIFICITY BETWEEN AIRCRAFT

An examination of Table XII shows the following:

A. Identical Tasks.

1. Codes (CAIC) 1 and 4 represent 287 tasks that are essentially identical for both the S-3 and P-3C. They comprise 64.3% of all the tasks applicable to the S-3 and/or P-3C.

B. Similar Tasks.

1. Codes 2 and 3 encompass 95 tasks that are essentially similar for both the S-3 and P-3C. They include 21.2% of all the tasks applicable to the S-3 and/or P-3C.

C. Specific Tasks.

1. Codes 5 through 8 represent 64 tasks that apply specifically to the S-3 or specifically to the P-3C. They comprise 14.5% of the tasks applicable to the S-3 and/or P-3C.

CONCLUSIONS

To interpret the following conclusions reference should be made to Figures 2 and 3 on pages 58 and 59.

A. Approximately 64% of a TACCO's tasks are relatively identical for S-3 and P-3C Weapon Systems at the function level. The distribution of these tasks across training areas is concentrated most in the Tactics and Sensor Management areas.

B. Approximately 21% of a TACCO's tasks are relatively similar for the S-3 and P-3C Weapons Systems. Of these, almost 100% have become automated function related tasks in the S-3.

The distribution of these tasks across training areas is again concentrated in Tactics followed by Sensor Management.

C. Of the remaining 15%, approximately 80% are specific to the S-3 and of these 88% are automated function related. The distribution of these tasks across training areas is confined to the COM, TAC, and SEN areas, and of these only TAC exhibits tasks as being specific to the P-3C TACCO.

D. Evaluations differ somewhat between East and West Coast respondees because of the time lag involved in installing weapon system modifications.

Table I

S-3/P-3C TACCO Position Inventory Index (Role/Duty Level)

Weapon System Manager Functional Roles	
Coordinator Effects the transmission of tactical data inputs	**Tactician** Interprets tactical data into tactical mission instructions
Coordination Duties	**Tactical Duties**
COM SUB SYS A. Communication Data Exchange	B. Direct Information Exchange Within the Crew C. Indirect Information Exchange Within the Crew D. Information Exchange With Other ASW Units
NAV SUB SYS E. Navigation Data Exchange	F. Geonavigation G. Tactical Navigation
TAC SUB SYS H. Tactical Process Data Exchange	I. Initial Contact Acquisition J. Localization K. Tracking/Attack L. Tactical Decision Aid
SEN SUB SYS M. Sensor Data Exchange	N. Acoustic Sensor Command and Control O. Nonacoustic Sensor Command and Control
ARM SUB SYS P. Armament Data Exchange	Q. Armament Control
ADP SUB SYS R. Automatic Data Processing Data Exchange	S. Initialization T. Recovery U. Degraded Operation V. Termination

Table II

Subsystem/Duty/Subduty/Task Example

Subsystem: Communication		
Duty:	A.	Communication Data Exchange.
Subduty:	A.1.	Exchange communication status information
Tasks:	A.1.1	Store/retrieve frequency and channel selection of the UHF transceivers.
	A.1.2	Store/retrieve frequency and channel selection of the HF transceivers.

Table III

Index Coded (CAIC) For Task Evaluation Response Conditions

CAIC	S-3	P-3C
1 (SC/SC)	SC NFO function(s) usually performed primarily through an ADP subsystem	SC NFO function(s) usually performed primarily through an ADP subsystem
2 (SC/NC)	SC NFO function(s) usually performed primarily through an ADP subsystem	NC NFO function(s) usually performed by means other than through an ADP subsystem
3 (NC/SC)	NC NFO function(s) usually performed by means other than through an ADP subsystem	SC NFO function(s) usually performed primarily through an ADP subsystem
4 (NC/NC)	NC NFO function(s) usually performed by means other than through an	NC NFO function(s) usually performed by means other than through an ADP subsystem
5 (SC/NSA)	SC NFO function(s) usually performed primarily through an ADP subsystem	NSA Unable to be identified as NFO function(s)
6 (NC/NSA)	NC NFO function(s) usually performed by means other than through an ADP subsystem	NSA Unable to be identified as NFO function(s)

Table IV

Commonality Analysis Index for Communication Sub-System Tasks

INDEX CODES	Tasks Common to S-3 and P-3				Tasks Specific to Aircraft				Tasks Non-Applicable To S-3/P-3 Systems
					S-3		P-3		
	1	2	3	4	5	6	7	8	9
	(SC/SC)	(SC/NC)	(NC/SC)	(NC/NC)	(SC/NSA)	(NC/NSA)	(NSA/SC)	(NSA/NC)	(NSA/NSA)
	A.3.11	A.1.1		A.2.5	A.3.14				
	A.3.12	A.1.2		A.2.6	A.3.15				
	A.3.13	A.1.3		A.2.7	A.3.16				
	A.3.18	A.1.4		A.2.9	A.3.17				
	A.4.19	A.2.8		A.2.10	A.6.30				
	A.4.20	A.5.26			A.6.31				
	A.4.21	A.5.27			A.6.32				
	A.4.22	A.5.28			A.6.33				
	A.4.23				A.6.34				
	A.4.24								
	A.4.25								
	A.5.29								
	B.1.1								
	C.1.1								C.1.10
	C.1.2								C.1.11
	C.1.3								
	C.1.4								
	C.1.5								
	C.1.6								
	C.1.7								
	C.1.8								
	C.1.9								
	D.1.1	D.1.21		D.1.12	D.1.13	D.1.10			D.1.2
	D.1.4	D.1.23			D.1.14				D.1.3
	D.1.7				D.1.15				D.1.5
	D.1.8								D.1.6
	D.1.9								
	D.1.11								
	D.1.16								
	D.1.17								
	D.1.18								
	D.1.19								
	D.1.20								
	D.1.22								

Table V

Commonality Analysis Index for Navigation Sub-System Tasks

	Tasks Common to S-3 and P-3				Tasks Specific to Aircraft				Tasks Non-Applicable To S-3/P-3 Systems
					S-3		P-3		
INDEX CODES	1	2	3	4	5	6	7	8	9
	(SC/SC)	(SC/NC)	(NC/SC)	(NC/NC)	(SC/NSA)	(NC/NSA)	(NSA/SC)	(NSA/NC)	(NSA/NSA)
	E.1.1 E.2.6 E.2.7 E.2.8 E.2.10 E.2.11 E.2.14 E.2.15	E.2.9		E.1.2 E.1.3 E.1.4 E.1.5 E.2.12 E.2.13					
	F.1.1 F.1.2 F.1.3 F.1.4 F.1.5 F.1.6 F.1.7 F.1.8								
	G.1.1 G.1.2 G.1.3 G.1.4 G.1.5 G.1.6				G.1.7				

Table VI

Commonality Analysis Index for Tactical Sub-System Tasks

	Tasks Common to S-3 and P-3				Tasks Specific to Aircraft				Tasks Non-Applicable To S-3/P-3 Systems
					S-3		P-3		
INDEX CODES	1	2	3	4	5	6	7	8	9
	(SC/SC)	(SC/NC)	(NC/SC)	(NC/NC)	(SC/NSA)	(NC/NSA)	(NSA/SC)	(NSA/NC)	(NSA/NSA)
	H.6.71	H.1.1	H.6.70	H.1.4	H.2.29	H.1.18	H.6.64		H.6.67
	H.6.72	H.1.2		H.2.32	H.7.82	H.3.44	H.6.65		H.6.69
	H.6.73	H.1.3		H.2.33			H.6.66		H.7.80
	H.6.74	H.1.5		H.2.34			H.6.68		
		H.1.6		H.3.35					
		H.1.7		H.3.36					
		H.1.8		H.3.37					
		H.1.9		H.3.38					
		H.1.10		H.3.39					
		H.1.11		H.3.40					
		H.1.12		H.3.41					
		H.1.13		H.3.42					
		H.1.14		H.3.43					
		H.1.15		H.4.45					
		H.1.16		H.4.46					
		H.1.17		H.4.47					
		H.2.19		H.4.48					
		H.2.20		H.4.49					
		H.2.21		H.4.50					
		H.2.22		H.4.51					
		H.2.23		H.4.52					
		H.2.24		H.4.53					
		H.2.25		H.4.54					
		H.2.26		H.4.55					
		H.2.27		H.4.56					
		H.2.28		H.4.57					
		H.2.30		H.5.58					
		H.2.31		H.5.59					
		H.7.75		H.5.60					
		H.7.76		H.5.61					
		H.7.77		H.5.62					
		H.7.78		H.5.63					
		H.7.79		H.7.86					
		H.7.81		H.7.88					
		H.7.83		H.7.89					
		H.7.84							
		H.7.85							
		H.7.87							

Table VI (Continued)

Commonality Analysis Index for Tactical Sub-System Tasks

	Tasks Common to S-3 and P-3				Tasks Specific to Aircraft				Tasks Non-Applicable To S-3/P-3 Systems
					S-3		P 3		
INDEX CODES	1	2	3	4	5	6	7	8	9
	(SC/SC)	(SC/NC)	(NC/SC)	(NC/NC)	(SC/NSA)	(NC/NSA)	(NSA/SC)	(NSA/NC)	(NSA/NSA)
	I.1.2	I.1.10				I.1.1			I.1.3
	I.1.5	I.1.12							I.1.4
	I.1.6	I.1.14							
	I.1 7								
	I.1.8								
	1.9								
	I.1.11								
	I.1.13								
	I.1.15								
	I.1.16								
	I.1.17								
	J.1.4	J.1.1							
		J.1.2							
		J.1.3							
		J.1.5							
	K.1.4	K.1.5		K.1.3					K.1.1
	K.1.6	K.2.8							K.1.2
	K.2.7	K.2.11							
	K.2.9	K.2.12							
	K.2.10	K.2.15							
	K.2.13								
	K.2.14								
	K.2.16								
	K. 17								

Table VI (Continued)

Commonality Analysis Index for Tactical Sub-System Tasks

INDEX CODES	Tasks Common to S-3 and P-3				Tasks Specific to Aircraft				Tasks Non-Applicable To S-3/P-3 Systems
					S-3		P-3		
	1	2	3	4	5	6	7	8	9
	(SC/SC)	(SC/NC)	(NC/SC)	(NC/NC)	(SC/NSA)	(NC/NSA)	(NSA/SC)	(NSA/NC)	(NSA/NSA)
	L.1.1	L.1.11		L.1.10	L.1.8	L.1.18	L.1.7		L.1.16
	L.1.2				L.1.20	L.1.19			L.1.38
	L.1.3				L.1.28	L.1.36			L.1.41
	L.1.4								
	L.1.5								
	L.1.6								
	L.1.9								
	L.1.12								
	L.1.13								
	L.1.14								
	L.1.15								
	L.1.17								
	L.1.21								
	L.1.22								
	L.1.23								
	L.1.24								
	L.1.25								
	L.1.26								
	L.1.27								
	L.1.29								
	L.1.30								
	L.1.31								
	L.1.32								
	L.1.33								
	L.1.34								
	L.1.35								
	L.1.37								
	L.1.39								
	L.1.40								

Table VII

Commonality Analysis Index for Sensor Sub-System Tasks

	Tasks Common to S-3 and P-3				Tasks Specific to Aircraft				Tasks Non-Applicable To S-3/P-3 Systems
					S-3		P-3		
INDEX CODES	1	2	3	4	5	6	7	8	9
	(SC/SC)	(SC/NC)	(NC/SC)	(NC/NC)	(SC/NSA)	(NC/NSA)	(NSA/SC)	(NSA/NC)	(NSA/NSA)
	M.1.1	M.1.4		M.4.62	M.3.45	M.5.84			M.6.97
	M.1.2	M.2.15		M.4.67	M.4.63				M.6.98
	M.1.3	M.2.16		M.4.68	M.4.64				
	M.1.5	M.2.17		M.4.69	M.4.65				
	M.1.6	M.2.18		M.4.70	M.5.71				
	M.1.7	M.2.19		M.6.92	M.5.72				
	M.2.8	M.2.20		M.6.93	M.5.73				
	M.2.9	M.2.21		M.6.94	M.5.74				
	M.2.10	M.2.22		M.6.95	M.5.75				
	M.2.11	M.2.23		M.6.96	M.5.76				
	M.2.12	M.3.44			M.5.77				
	M.2.13	M.3.49			M.5.78				
	M.2.14	M.3.50			M.5.79				
	M.2.24	M.4.66			M.5.80				
	M.2.25	M.6.88			M.5.81				
	M.2.26	M.6.89			M.5.82				
	M.2.27	M.6.90			M.5.83				
	M.2.28				M.6.91				
	M.2 29								
	M.2.30								
	M.2.31								
	M.2.32								
	M.2.33								
	M.2.34								
	M.3.35								
	M.3.36								
	M.3.37								
	M.3.38								
	M.3.39								
	M.3.40								
	M.3.41								
	M.3.42								
	M.3.43								

Table VII (Continued)

Commonality Analysis Index for Sensor Sub-System Tasks

INDEX CODES	Tasks Common to S-3 and P-3				Tasks Specific to Aircraft				Tasks Non-Applicable To S-3/P-3 Systems
					S-3		P-3		
	1	2	3	4	5	6	7	8	9
	(SC/SC)	(SC/NC)	(NC/SC)	(NC/NC)	(SC/NSA)	(NC/NSA)	(NSA/SC)	(NSA/NC)	(NSA/NSA)
	M.3.46								
	M.3.47								
	M.3.48								
	M.3.51								
	M.3.52								
	M.3.53								
	M.3.54								
	M.3.55								
	M.3.56								
	M.3.57								
	M.4.58								
	M.4.59								
	M.4.60								
	M.4.61								
	M.6.85								N.1.1
	M.6.86								N.1.2
	M.6.87								N.1.3
									N.1.4
									N.1.5
									N.1.6
									N.1.7
									N.1.8
									N.1.9
									N.1.10
	O.1.1	O.1.6			O.1.17				O.1.9
	O.1.2	O.1.6			O.1.21				O.1.34
	O.1.3	O.1.7			O.1.22				O.1.35
	O.1.4	O.1.11			O.1.25				O.1.36
	O.1.8	O.1.12			O.1.26				O.1.40
	O.1.10	O.1.13			O.1,27				O.1.42
	O.1.14	O.1.15			O.1.28				
	O.1.18	O.1.16			O.1.29				
	O.1.44	O.1.19			O.1.30				
		O.1.20			O.1.31				
		O.1.23			O.1.32				
		O.1.24			O.1.33				
		O.1.41			O.1.37				
		O.1.43			O.1.38				
					O.1.39				

Table VIII

Commonality Analysis Index for Armament Sub-System Tasks

INDEX CODES	Tasks Common to S-3 and P-3				Tasks Specific to Aircraft				Tasks non-Applicable To S-3/P-3 Systems
					S-3		P-3		
	1	2	3	4	5	6	7	8	9
	(SC/SC)	(SC/NC)	(NC/SC)	(NC/NC)	(SC/NSA)	(NC/NSA)	(NSA/SC)	(NSA/NC)	(NSA/NSA)
	P.1.1	P.1.13		P.1.16					
	P.1.2	P.2.24		P.2.29					
	P.1.3								
	P.1.4								
	P.1.5								
	P.1.6								
	P.1.7								
	P.1.8								
	P.1.9								
	P.1.10								
	P.1.11								
	P.1.12								
	P.1.14								
	P.1.15								
	P.2.17								
	P.2.18								
	P.2.19								
	P.2.20								
	P.2.21								
	P.2.22								
	P.2.23								
	P.2.25								
	P.2.26								
	P.2.27								
	P.2.28								
	Q.1.1								
	Q.1.2								
	Q.1.3								
	Q.1.4								
	Q.1.5								
	Q.1.6								
	Q.1.7								

Table IX

Commonality Analysis Index for Automatic Data Processor Sub-System Tasks

	Tasks Common to S-3 and P-3				Tasks Specific to Aircraft				Tasks Non-Applicable To S-3/P-3 Systems
					S-3		P-3		
INDEX CODES	1	2	3	4	5	6	7	8	9
	(SC/SC)	(SC/NC)	(NC/SC)	(NC/NC)	(SC/NSA)	(NC/NSA)	(NSA/SC)	(NSA/NC)	(NSA/NSA)
	R.1.1	R.1.3 U.1.8		R.1.2			S.1.3		
	S.1.1 S.1.2 S.1.4								
	T.1.1 T.1.2 T.1.3 T.1.4 T.1.5 T.1.6 T.1.7 T.1.8								
	U.1.1 U.1.2 U.1.3 U.1.4 U.1.5 U.1.6 U.1.7								
	V.1.1 V.1.3	V.1.2							

Table X

System Applicability/No System Applicability Between Aircraft

Analysis Level I / CAIC	SC/SC 1	SC/NC 2	NC/SC 3	NC/NC 4	SC/NSA 5	NC/NSA 6	NSA/SC 7	NSA/NC 8	NSA/NSA 9	Totals	%*
A System Applicable S-3 and P-3C	225	94	1	62						382	86
B System Applicable S-3 only					51	7				58	13
C System Applicable P-3C only							6	0		6	1
										446	100
D Non-system Applicable S-3 and/or P-3C									34	34	

*Percentage is based upon total number of system applicable tasks. For data integrity purposes the number of non-system applicable tasks (S-3 and/or P-3C) are shown but are not treated analytically.

Table XI

System Capability/No(System) Capability Between Aircraft

Analysis Level II CAIC	SC/SC 1	SC/NC 2	NC/SC 3	NC/NC 4	SC/NSA 5	NC/NSA 6	NSA/SC 7	NSA/NC 8	Total	%
A System Capability S-3 and P-3C	225								225	60
B System Capability S-3		94			51				145	38
C System Capability P-3C			1				6		7	2
C No System Capability S-3 and P-3C				62					62	38
E No System Capability S-3			1			7			8	5
F No System Capability P-3C		94						0	94	57

Table XII

System Identity/Similarity/Specificity Between Aircraft

Analysis Level III CAIC	SC/SC 1	SC/NC 2	NC/SC 3	NC/NC 4	SC/NSA 5	NC/NSA 6	NSA/SC 7	NSA/NC 8	Total	%
A System Identity	225			62					287	64.3
B System Similarity		94	1						95	21.2
C System Specificity					51	7	6	0	64	14.5

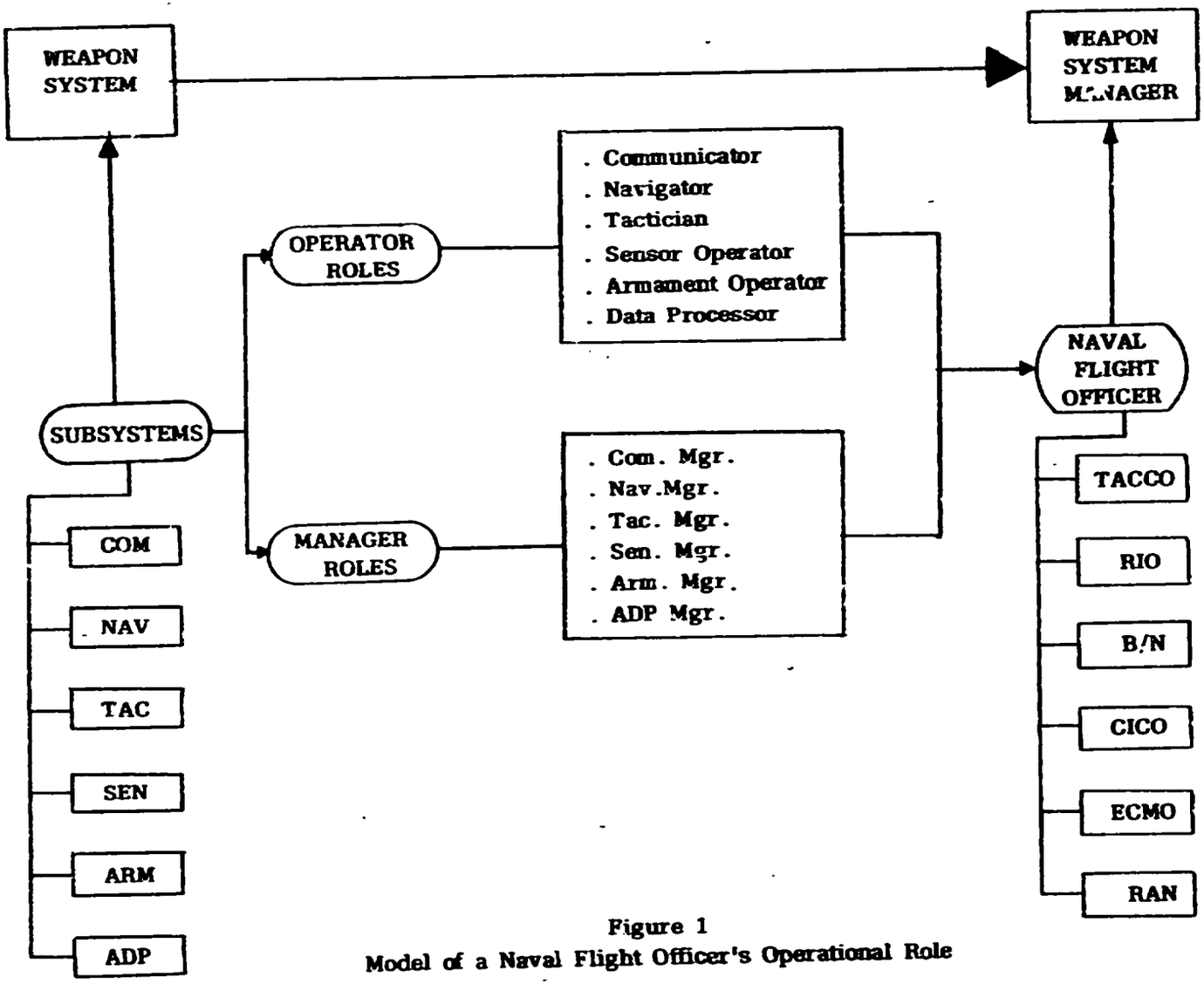

Figure 1
Model of a Naval Flight Officer's Operational Role

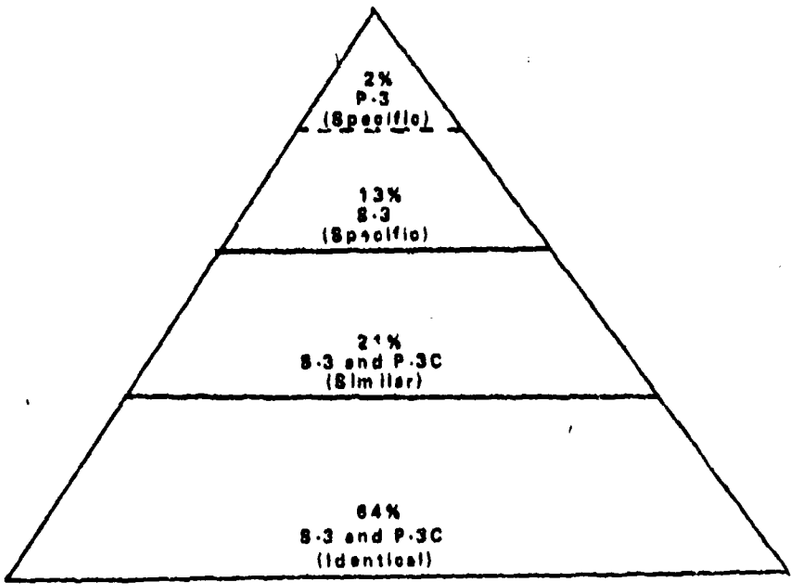

Figure 2

Hierarchy of Commonality

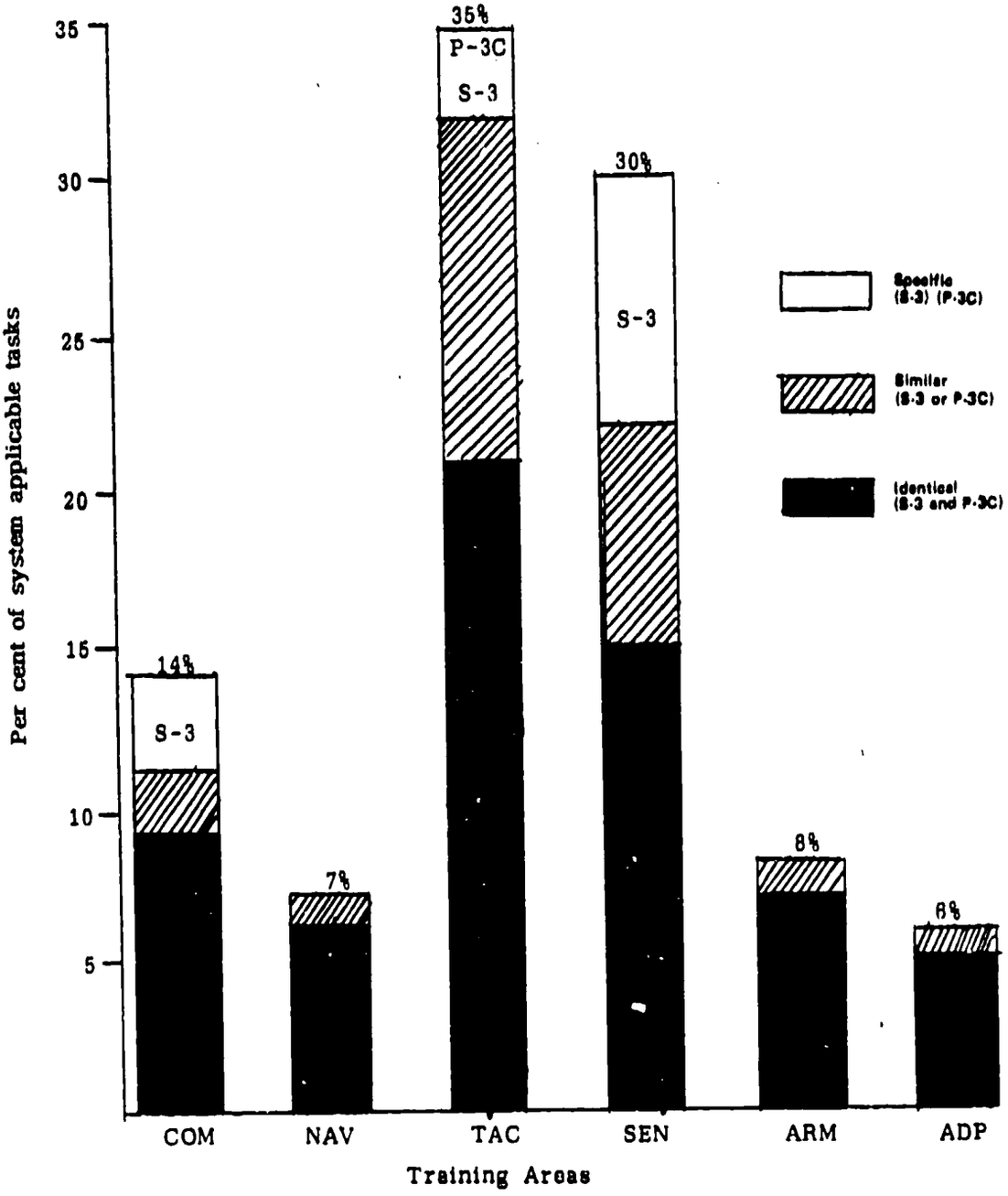

Figure 3

Concentration of tasks within subsystem derived training areas.

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Appendix A

Raw Data Summary Tables

Table A - I

COORDINATION TASKS

COMMUNICATION SUB-SYSTEM	S-3			·3(E)			P-3(W)		
DUTIES/SUB-DUTIES	SC	SA NC	NSA	SC	SA NC	NSA	SC	SA NC	NSA
A. Communication Data Exchange									
A.1 Communication Status	4	0	0	0	3	1	0	4	0
A.2 Frequency Assignment	1	5	0	0	6	0	0	6	0
A.3 Data Link Information	8	0	0	4	0	4	4	0	4
A.4 Data Link Parameters	7	0	0	6	0	1	7	0	0
A.5 Crypto Material	4	0	0	1	3	0	1	3	0
A.6 Voice Call Information	5	0	0	0	0	5	0	0	5
Total Coordination Tasks	29	5	0	11	12	11	12	13	9

TACTICAL TASKS

	SC	NC	NSA	SC	NC	NSA	SC	NC	NSA
B. Direct Information Exchange Within Crew	1	0	0	1	0	0	1	0	0
C. Indirect Information Exchange Within Crew	9	0	2	9	0	2	9	0	2
D. Information Exchange With Other ASW Units	17	2	4	7	3	13	12	3	8
Total Tactical Tasks	27	2	6	17	3	15	22	3	10

Table A - II

NAVIGATION SUB-SYSTEM	COORDINATION TASKS								
	S-3			P-3(E)			P-3(W)		
DUTIES/SUB-DUTIES	SA SC	SA NC	NSA	SA SC	SA NC	NSA	SA SC	SA NC	NSA
E. Navigation Data Exchange									
E.1 Flight Plan Information	1	4	0	1	4	0	1	4	0
E.2 Navigation Parameters	8	2	0	7	3	0	7	3	0
Total Coordination Tasks	9	6	0	8	7	0	8	7	0

	TACTICAL TASKS								
	SC	NC	NSA	SC	NC	NSA	SC	NC	NSA
F. Geonavigation	8	0	0	8	0	0	8	0	0
G. Tactical Navigation	7	0	0	6	0	1	6	0	1
Total Tactical Tasks	15	0	0	14	0	1	14	0	1

Table A-III

COORDINATION TASKS

TACTICAL SUB-SYSTEM	S-3			P-3(E)			P-3(W)		
DUTIES/SUB-DUTIES	SA		NSA	SA		NSA	SA		NSA
	SC	NC		SC	NC		SC	NC	
H. Tactical Process Data Exchange									
H.1 Flight Summary Information	16	2	0	0	17	1	0	17	1
H.2 Reference Data Information	13	3	0	0	15	1	0	15	1
H.3 Meteorological Information	0	10	0	0	9	1	0	9	1
H.4 Oceanographic Information	0	14	0	1	13	0	1	13	0
H.5 Acoustic Sensor Contact Information	0	5	0	0	4	0	0	4	0
H.6 Sono Buoy Field Information	4	1	6	5	0	6	8	0	3
H.7 Submarine Target Data Information	11	3	1	0	12	3	0	13	2
Total Coordination Tasks	44	38	7	6	70	12	9	71	8

TACTICAL TASKS

	SC	NC	NSA	SC	NC	NSA	SC	NC	NSA
I. Initial Contact Acquisition	14	1	2	9	5	1	11	3	1
J. Localization	5	0	0	1	4	0	1	4	0
K. Tracking/Attack	14	1	2	9	6	2	9	6	2
L. Tactical Decision Aid	33	4	4	29	3	9	27	2	12
Total Tactical Tasks									

Table A - IV

SENSOR SUB-SYSTEM	COORDINATION TASKS								
	S-3			P-3(E)			P-3(W)		
DUTIES/SUB-DUTIES	SA		NSA	SA		NSA	SA		NSA
	SC	NC		SC	NC		SC	NC	
M. Sensor Data Exchange									
M.1 RF Assignment Status Information	6	0	0	5	1	0	5	1	0
M.2 Radar Information	28	0	0	18	10	0	19	9	0
M.3 ECM Information	23	0	0	0	0	23	19	3	1
M.4 Visual/Photo Information	8	5	0	4	5	4	4	6	3
M.5 FLIR Information	13	1	0	0	0	14	0	0	14
M.6 MAD Information	7	5	2	3	8	3	3	8	3
Total Coordination Tasks	85	11	2	30	24	44	50	27	21

	TACTICAL TASKS								
	SC	NC	NSA	SC	NC	NSA	SC	NC	NSA
N. Sono Buoy Command Control	0	0	10	0	0	10	0	0	10
O. Non-Acoustic Sensor Control	38	0	6	2	23	19	10	12	22
Total Tactical Tasks	38	0	16	2	23	29	10	12	32

Table A - V

SENSOR SUB-SYSTEM	COORDINATION TASKS								
	S-3			P-3(E)			P-3(W)		
DUTIES/SUB-DUTIES	SA		NSA	SA		NSA	SA		NSA
	SC	NC		SC	NC		SC	NC	
P. Armament Data Exchange									
P.1 Search Stores Information	15	1	0	14	2	0	14	2	0
P.2 Weapons Information	12	1	0	11	2	0	11	2	0
Total Coordination Tasks	27	2	0	25	4	0	25	4	0

	TACTICAL TASKS								
	SC	NC	NSA	SC	NC	NSA	SC	NC	NSA
Q. Exercise On-Line Control Over Armament System	7	0	0	7	0	0	7	0	0
Total Tactical Tasks	7	0	0	7	0	0	7	0	0

Table A - VI

AUTOMATIC DATA PROCESSOR SUB-SYSTEM

COORDINATION TASKS

DUTIES/SUB-DUTIES	S-3			P-3(E)			P-3(W)		
	SA		NSA	SA		NSA	SA		NSA
	SC	NC		SC	NC		SC	NC	
R. Automatic Data Processing Information Exchange									
R.1 System Status Information	2	1	0	1	2	0	1	2	0
Total Coordination Tasks	2	1	0	1	2	0	1	2	0

TACTICAL TASKS

	SC	NC	NSA	SC	NC	NSA	SC	NC	NSA
S. Initialization of System	3	0	1	4	0	0	4	0	0
T. Recovery of System	8	0	0	7	1	0	8	0	0
U. Operation of Degraded System	7	1	0	0	0	8	7	1	0
V. Termination of System	2	1	0	0	0	3	2	1	0
Total Tactical Tasks	20	2	1	11	1	11	21	2	0

Table A - VII

Raw Data Summary of the Commonality Analysis Index

Subsystem/ Duty		Evaluation Response Condition Data										
		SC/SC 1	SC/NC 2	NC/SC 3	NC/NC 4	SC/NSA 5	NC/NSA 6	NSA/SC 7	NSA/NC 8	Subsystem Tasks Totals	Per Cent	NSA/NSA 9
COM												
	A	12	8	0	5	9	0	0	0			0
	B	1	0	0	0	0	0	0	0			0
	C	9	0	0	0	0	0	0	0			2
	D	12	2	0	1	3	1	0	0			4
		34	10	0	6	12	1	0	0	63	14%	6
NAV												
	E	8	1	0	6	0	0	0	0			0
	F	8	0	0	0	0	0	0	0			0
	G	6	0	0	0	1	0	0	0			0
		22	1	0	6	1	0	0	0	30	7%	0
TAC												
	H	4	36	1	36	2	2	4	0			3
	I	11	3	0	0	0	0	0	0			2
	J	4	0	0	0	0	0	0	0			0
	K	9	5	0	1	0	0	0	0			2
	L	29	1	0	1	3	3	1	0			3
		57	47	1	37	5	5	5	0	157	36%	10
SRN												
	M	50	17	0	10	18	1	0	0			2
	N	0	0	0	0	0	0	0	0			10
	O	9	14	0	0	15	0	0	0			6
		59	31	0	10	33	1	0	0	134	30%	18
ARM												
	P	25	2	0	2	0	0	0	0			0
	Q	7	0	0	0	0	0	0	0			0
		32	2	0	2	0	0	0	0	36	8%	0
ADP												
	R	1	1	0	1	0	0	0	0			0
	S	3	0	0	0	0	0	1	0			0
	T	8	0	0	0	0	0	0	0			0
	U	7	1	0	0	0	0	0	0			0
	V	2	1	0	0	0	0	0	0			0
		21	3	0	1	0	0	1	0	26	6%	0
Response Condition Totals		225	94	01	62	51	7	6	0	446	100%	34

Appendix B

Derivation Tables

Table B I

Level I Commonality Analysis Derivations

	Task Evaluation Response Conditions								
ACFT	CAIC 1	2	3	4	5	6	7	8	9
S-3	SC	SC	NC	NC	SC	NC	NSA	NSA	NSA
P-3C	SC	NC	SC	NC	NSA	NSA	SC	NC	NSA
System applicable									
S-3	SC	SC	NC	NC					
P-3C	SC	NC	SC	NC					
S-3					SC	NC			
P-3C							SC	NC	
Non-system applicable									
S-3									NSA
P-3C									NSA

Table B II

Level II Commonality Analysis Derivations

	Task Evaluation Response Conditions								
ACFT	CAIC 1	2	3	4	5	6	7	8	9
S-3	SC	SC	NC	NC	SC	NC	NSA	NSA	NSA
P-3C	SC	NC	SC	NC	NSA	NSA	SC	NC	NSA
System capability									
S-3	SC								
P-3C	SC								
S-3		SC			SC				
P-3C			SC				SC		
No(System) capability									
S-3				NC					
P-3C				NC					
S-3			NC		NC				
P-3C		NC						NC	

Table B III

Level III Commonality Analysis Derivations

	Tasks Evaluation Response Conditions								
ACFT	**CAIC 1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
S-3	SC	SC	NC	NC	SC	NC	NSA	NSA	NSA
P-3C	SC	NC	SC	NC	NSA	NSA	SC	NC	NSA
				Specific					
S-3					SC	NC			
P-3C							SC	NC	
				Similar					
S-3		SC	NC						
P-3C		NC	SC						
				Identical					
S-3	SC			NC					
P-3C	SC			NC					